

IN THE CLAIMS:

Please re-write the claims to read as follows:

- 1 1. (Currently Amended) A method for performing an input/output operation to a storage
2 device from a computer, ~~the storage device having one or more data paths to the com-~~
3 ~~puter,~~ the method comprising the steps of:
4 selecting a first data path from a set of data paths ~~to~~ between the computer and
5 the storage device;
6 attempting the input/output operation using the selected first data path;
7 selecting, in response to an error in the input/output operation using the first data
8 path, a next data path from the set of data paths; and
9 attempting the input/output operation using the selected next data path.
- 1 2. (Original) The method of claim 1 wherein the set of data paths is dynamically gener-
2 ated in response to storage device events.
- 1 3. (Original) The method of claim 2 wherein the storage device event further comprises a
2 Fibre Channel loop initialization event.
- 1 4. (Original) The method of claim 1 wherein the first data path further comprises a last
2 used data path associated with the storage device.
- 1 5. (Original) The method of claim 1 wherein the storage device further comprises a disk
2 drive.
- 1 6. (Original) The method of claim 5 wherein the disk drive is operatively interconnected
2 with the computer by a Fibre Channel Arbitrated Loop.

- 1 7. (Original) The method of claim 1 wherein the computer further comprises a file
2 server.
- 1 8. (Original) The method of claim 1 wherein the set of data paths are described by a re-
2 lated set of data structures.
- 1 9. (Original) The method of claim 1 wherein the data paths utilize a Fibre Channel con-
2 nection.
- 1 10. (Original) A method for maintaining a set of data paths accessible by a set of upper
2 level services of a storage operating system of a computer, the method comprising the
3 steps of:
4 creating a device instance associated with a storage device;
5 creating a first path instance associated with a first path to the storage device;
6 creating, in response to events identifying an addition of a path, an additional path
7 instance associated with an additional path to the storage device; and
8 deleting, in response to events identifying a removal of a path, a path instance as-
9 sociated with the removed path.
- 1 11. (Original) The method of claim 10 wherein the step of creating a device instance oc-
2 curs in response to receipt of an event identifying an addition of a storage device.
- 1 12. (Original) The method of claim 10 wherein the events identifying an addition of a
2 path is a Fibre Channel loop initialization event.
- 1 13. (Original) The method of claim 10 wherein the events identifying removal of a path is
2 a Fibre Channel loop initialization event.

1 14. (Original) The method of claim 10 wherein the step of creating an additional path in-
2 stance further comprises the step of linking the additional path instance to a linked list of
3 path instances associated with the storage device.

1 15. (Original) The method of claim 10 wherein the device instance and path instances are
2 accessible via an application program interface.

1 16. (Original) The method of claim 10 wherein the set of upper level services further
2 comprises a redundant array of inexpensive disks layer of the storage operating system.

1 17. (Original) A computer for use with a plurality of storage devices having one or more
2 data paths associated with the storage devices, the computer comprising:
3 means for detecting changes to the data paths associated with the storage devices;
4 means for maintaining a set of path instances associated with each of the plurality
5 of storage devices, the data path instances accessible to a set of upper level services;
6 means for performing input/output operations to the plurality of storage devices
7 using a first data path;
8 means for selecting alternate data paths, in response to an error occurring with the
9 first data path; and
10 means for performing input/output operations to the plurality of storage devices
11 using the selected alternate data paths.

1 18. (Original) The computer of claim 17 wherein the upper level services access the data
2 path instances via an application program interface.

1 19. (Original) A storage operating system executing on a computer, the storage operating
2 system comprising:
3 a routing administration layer, the routing administration layer dynamically updat-
4 ing a set of device instances, each device instance associated with a storage device;

5 wherein each device instance includes at least one path instance, each path in-
6 stance identifying a path from the computer to the associated storage device; and
7 a set of upper level services, the upper level services capable of accessing the de-
8 vice instances.

1 20. (Original) The storage operating system of claim 19 wherein the routing administra-
2 tion layer further comprises an application program interface, the application program
3 interface providing the upper level services access to the set of device instances.

1 21. (Original) The storage operating system of claim 19 wherein the upper level services
2 further comprises a redundant array of independent disks layer of the storage operating
3 system.

1 22. (Original) A computer-readable medium, including program instructions executing
2 on a computer, for performing an input/output operation to a storage device having one or
3 more data paths to the computer, the program instructions including steps for:

4 selecting a first data path from a linked list of data paths to the storage device;
5 attempting the input/output operation using the selected first data path;
6 selecting, in response to an error in the input/output operation using the first data
7 path, a next data path from the linked list of data paths; and
8 attempting the input/output operation using the selected next data path.

1 23. (Original) A computer-readable medium, including program instructions executing
2 on a computer, for maintaining a set of data paths accessible by a set of upper level ser-
3 vices of a storage operating system, the program instructions including steps for:

4 creating a device instance associated with a storage device;
5 creating a first path instance associated with a first path to the storage device;
6 creating, in response to events identifying an addition of a path, an additional path
7 instance associated with additional path to the storage device; and

8 deleting, in response to events identifying a removal of a path, a path instance associated
9 with the removed path.

1 24. (Previously presented) Electromagnetic signals propagating on a computer network,
2 comprising:

3 said electromagnetic signals carrying instructions for execution on a processor for
4 the practice of a method for performing an input/output operation to a storage device
5 from a computer, the storage device having one or more data paths to the computer, the
6 method having the steps,

7 selecting a first data path from a set of data paths to the storage device;
8 attempting the input/output operation using the selected first data path;
9 selecting, in response to an error in the input/output operation using the first data
10 path, a next data path from the set of data paths; and
11 attempting the input/output operation using the selected next data path.

Please add new claims 25 et seq. as follows:

1 25. (New) The method of claim 1 further comprising:
2 dynamically generating the set of data paths in response to a storage device event.

1 26. (New) The method of claim 1 further comprising:
2 dynamically generating the set of data paths in response to a Fibre Channel loop
3 initialization event.

- 1 27. (New) The method of claim 1 further comprising:
2 selecting, as the first data path, a last used data path associated with the storage
3 device.
- 1 28. (New) The method of claim 1 further comprising:
2 performing the input/output operation to a disk drive as the storage device.
- 1 29. (New) The method of claim 28 further comprising:
2 interconnecting the computer with the disk drive by a Fibre Channel Loop.
- 1 30. (New) The method of claim 1 further comprising:
2 performing the input/output operation from a file server as the computer.
- 1 31. (New) The method of claim 1 further comprising:
2 describing the set of data paths by a set of data structures.
- 1 32. (New) The method of claim 1 further comprising:
2 utilizing a Fibre Channel connection as a data path of the set of data paths.
- 1 33. (New) A computer for performing an input/output operation to a storage device hav-
2 ing one or more data paths to the computer, the computer comprising:
3 means for selecting a first data path from a set of data paths to the storage device;
4 means for attempting the input/output operation using the selected first data path;
5 means for selecting, in response to an error in the input/output operation using the
6 first data path, a next data path from the set of data paths; and
7 means for attempting the input/output operation using the selected next data path.
- 1 34. (New) The computer of claim 33 further comprising:

2 means for dynamically generating the set of data paths in response to a storage
3 device event.

1 35. (New) The computer of claim 33 further comprising:

2 means for dynamically generating the set of data paths in response to a Fibre
3 Channel loop initialization event.

1 36. (New) The computer of claim 33 further comprising:

2 means for selecting, as the first data path, a last used data path associated with the
3 storage device.

1 37. (New) The computer of claim 33 further comprising:

2 means for performing the input/output operation to a disk drive as the storage de-
3 vice.

1 38. (New) The computer of claim 37 further comprising:

2 means for interconnecting the computer with the disk drive by a Fibre Channel
3 Loop.

1 39. (New) The computer of claim 33 further comprising:

2 means for performing the input/output operation from a file server as the com-
3 puter.

1 40. (New) The computer of claim 33 further comprising:

2 means for describing the set of data paths by a set of data structures.

1 41. (New) The computer of claim 33 further comprising:

2 means for utilizing a Fibre Channel connection as a data path of the set of data
3 paths.

1 42. (New) A system for performing an input/output operation between a computer and a
2 storage device, comprising:

3 a plurality of data paths between the computer and the storage device;

4 a first data path selected from the plurality of data paths;

5 a first software code in a routing administrator, to attempt the input/output opera-
6 tion using the selected first data path;

7 a second software code to select, in response to an error in the input/output opera-
8 tion using the first data path, a next data path from the plurality of data paths; and

9 a third software code to attempt the input/output operation using the selected next
10 data path.

1 43. (New) The system of claim 42 further comprising:

2 a plurality of data paths dynamically generated in response to a storage device
3 event.

1 44. (New) The system of claim 42 further comprising:

2 a plurality of data paths dynamically generated in response to a Fibre Channel
3 loop initialization event.

1 45. (New) The system of claim 42 further comprising:

2 the first data path is a last used data path associated with the storage device.

1 46. (New) The system of claim 42 further comprising:

2 a disk drive as the storage device.

1 47. (New) The system of claim 42 further comprising:

2 a Fibre Channel Loop connecting the computer to a disk drive as the storage de-
3 vice.

1 48. (New) The system of claim 42 further comprising:

2 a file server as the computer.

1 49. (New) The system of claim 42 further comprising:

2 a data structure to describe the plurality of data paths.

1 50. (New) The system of claim 42 further comprising:

2 a Fibre Channel connection as a path of the plurality of data paths.